

REMARKS

The Applicants thank the Examiner for the thorough examination of the application. No new matter is believed to be added to the application by this Amendment.

Status of the Claims

Claims 1-3 and 5-15 are pending in the application. Support for the amendments to claims 1 and 6 can be found in Figures 1 and 2.

Rejection Under 35 U.S.C. §112 First Paragraph

Claims 1-3 and 5-15 are rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement. Applicants respectfully traverse.

At page 2 of the Office Action, the Examiner finds the terms "gas generating agent" and "gas generating composition" in the specification not to be equivalent, and asserts that the term "gas generating agent" is not disclosed in such a manner to allow one skilled in the art to make or use the invention. Although Applicants believe that the terminology in the specification is clear, claims 1 and 6 have been amended to use the term "gas generating composition." As a result, the claims set forth the present invention sufficiently clear to allow one of ordinary skill to make or use the invention.

This rejection is overcome and withdrawal thereof is respectfully requested.

Rejection under 35 U.S.C. 103(a) over Lundstrom and Kirchoff

Claims 1-3 and 5-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundstrom (U.S. Patent No. 5,756,929) in view of Kirchoff (U.S. Patent No. 3,972,545). Applicants respectfully traverse.

The Present Invention and Its Advantages

The present invention pertains to an airbag inflator that helps reduce the amount of NO_x generated by the combustion of a gas generating agent. In one embodiment of the invention, a coolant/filter surrounds a perimeter of a gas generating composition. The present invention has many embodiments, and a typical embodiment is found in instant claim 1:

1. An inflator comprising:
a gas generating composition;
a reducing material;
an ignition means; and
a coolant/filter surrounding a perimeter of the gas generating composition, wherein said reducing material is placed in the inflator.

In the invention, the reducing material produces a radical, $\bullet\text{NH}_2$, by combustion heat. The production of this radical from 5-aminotetrazole (5-AT) is shown at page 12, line 13 of the specification, where:

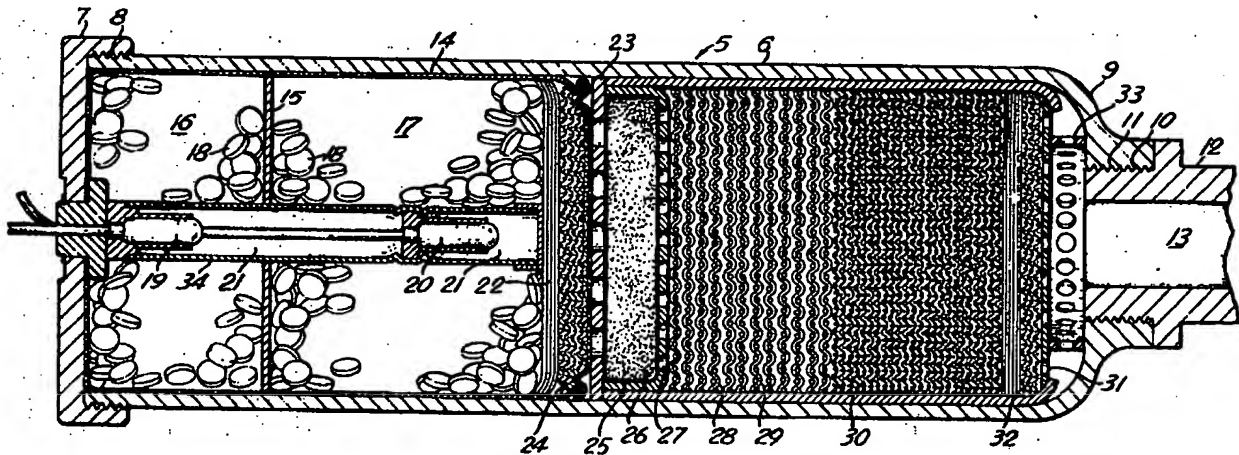


In an embodiment shown in the Examples of the invention, a gas generating agent including nitroguanidine (NQ), strontium nitrate ($\text{Sr}(\text{NO}_3)_2$) and carboxymethyl cellulose (CMC) is used. Then, 5-AT is separately used as the reducing agent.

Distinctions Of The Invention Over Lundstrom and Kirchoff

Lundstrom pertains to nonazide gas generating compositions in which a gas generant composition can include guanidine compounds (column 2, lines 21-38). Lundstrom at column 3, lines 33-42 discusses ballistic modifiers. Lundstrom at column 4, lines 8-16 discusses ignition aids.

At page 3, lines 6-7 of the Office Action, the Examiner admits that Lundstrom fails to disclose an inflator with a coolant/filter. The Examiner then turns to Kirchoff. However, the Figure of Kirchoff discloses cooling screens 28 having a fundamentally different geometry than the peripheral coolant/filter 30 of the present invention.



That is, the coolant/filter surrounding a perimeter of the gas generating composition of claim 1 are features that are neither disclosed nor suggested in the drawing of Kirchoff. The present invention has a coolant/filter 30 surrounding the combustion chamber while the cooling screens 28 of Kirchoff are only at one end of the slender combustion chamber.

Also, one having ordinary skill would recognize that a non-azide gas generating agent (or composition), as disclosed in Lundstrom, has a burning rate of 10-20 mm/sec or more at 70 kg/cm², and Lundstrom thus requires a ballistic modifier such as a guanidine compound.

In contrast, an azide gas generating agent, such as is disclosed in Kirchoff, has a burning rate of 40 mm/sec or more at 70 kg/cm². The azide gas generating agent thus has a higher burning rate than the non-azide gas generating agent.

As a result, the two references of Lundstrom and Kirchoff teach away from each other. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983). A *prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362, 1366 (Fed. Cir. 1997).

Therefore, one having ordinary skill in the art would not be motivated by the teachings of Lundstrom and Kirchoff to produce the present invention as embodied in independent claims 1 and 6. A *prima facie* case of obviousness has thus not been made. Claims depending upon claims 1 and 6 are patentable for at least the above reasons. This rejection is overcome and withdrawal thereof is respectfully requested.

Information Disclosure Statement

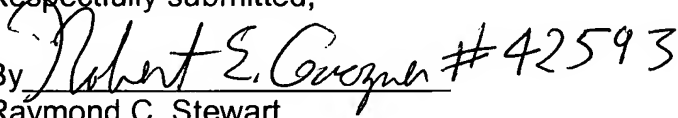
The Applicants thank the Examiner for considering the Information Disclosure Statement filed September 30, 2003 and for making initialed sheet 1 and sheet 2 of the PTO-1449 form of record in the application in the Office Action mailed August 19, 2004.

Conclusion

The Examiner's rejections has been successfully traversed, obviated or rendered moot. No issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

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